PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

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NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

To:

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ETATS-UNIS D'AMERIQUE

Date of mailing *(day/month/year)*	
07 December 2006 (07.12.2006)	
Applicant's or agent's file reference	**IMPORTANT NOTICE**
17146-002WO1	

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2005/011749	07 April 2005 (07.04.2005)	16 April 2004 (16.04.2004)

Applicant: FORTELLIGENT, INC. et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 17146-002WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2005/011749	International filing date *(day/month/year)* 07 April 2005 (07.04.2005)	Priority date *(day/month/year)* 16 April 2004 (16.04.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant FORTELLIGENT, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 29 November 2006 (29.11.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Philippe Becamel e-mail: pt12@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	02 NOV 2006
Applicant's or agent's file reference 17146-002WO1	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US05/11749	07 April 2005 (07.04.2005)	16 April 2004 (16.04.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC: Please See Continuation Sheet
USPC: 700/97,703/22,703/22,705/7,705/10,705/38,717/104

Applicant

FORTELLIGENT, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV — Lack of unity of invention
- ☒ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☐ Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis(b)* that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	01 August 2006 (01.08.2006)	Hafiz Tariq Telephone No. 571-272-3600

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/11749

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ on paper

☐ in electronic form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in electronic form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/11749

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 50	YES
	Claims 1-49 and 51-172	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-172	NO
Industrial applicability (IA)	Claims 1-172	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

Continuation of IPC:
G06F 19/00(2006.01),G06F 9/45,G06F 7/60,G06F 9/44,G06F 17/30,G06Q 40/00,G06F 9/44

V. 2. Citations and Explanations:
Claims 1-49 and 51-172 lack novelty under PCT Article 33(2) as being anticipated by Cabena et al., Intelligent Miner for Data Applications Guide (March 1999).

Regarding Claims 1, 7, 11, 17-18, 20, 25, 28, 35, 41-45, 49, 51-56,61, 67-70, 72-80, 85, 91, 126, 141 and 165-172 Intelligent Miner teaches a machine-based system and method comprising (Chapter 1.4-1.5, Pages 8-13; Chapter 1.6, 15-17; Chapter 3, Pages 27-33; Chapter 4, Pages 33-66; Chapter 5, Pages 70-77; Chapter 6, Pages 89-108; Chapter 7, Pages 111-131; Figures 3, 7-11, 16, 27, 29, 30, 46, 49, 53, 56, 58, 60, 64):

- generating predictive models based on historical data received from one or more sources (Chapter 1.5, Pages 9-13);
- storing project information (model, variables, data, common location/format, etc.) for successive steps in model generation wherein the information includes at least two of the following: project objectives, requirements, information about historical data, model equations, model performance characteristics and model outputs (metadata; Chapter 1.6, Pages 13-17);
- a common project tracking paradigm (workflow, task guides, approach, structured sequence, staging, methodology, etc.) via a graphical user interface (icons, indicia, images, menus, etc.) includes sample dataset generation, variable transformation, dimension reduction, model generation/validation (testing) and list scoring (Chapter 1.6, Pages 13-17; Chapter 4.3, Pages 34-38; Chapter 5.3, Pages 70-73; Chapter 6.3, Pages 90-95; Chapter 7.3, Pages 113-120);
- includes a series of user choice points (design choices), actions or parameters that govern the generation of the model (Chapter 5.3, Pages 70-74; Chapter 6.3, Pages 89-95; Chapter 8.3, Pages 115-120);
- generating a model (output) the includes a selection, rank by propensity based on the scoring of the customer data (Pages 11, 87; Chapter 6.3.1, Pages 90-91);
- transforming variables into predictive variables (normalization, Bayesian normalization, source variables, predictive power, strength measurement, data transformations, etc.; Pages 16, 22; Chapter 4.3.2, Pages 38-29; Chapter 6.3.2, Pages 93-94);
- accounting for (inputs, enters, adjusts for, etc.) missing and/or unstable values/data (e.g. pruning, estimation, Bayesian normalization, data preparation, etc.; Pages 16, 24, 97, 100);
- adjusting variables to represent effects exhibited by the data (main effects/interactions; processing functions (Page 16) ;
- derived variables include constructed variables and transformed variables (Chapter 4.3.2, Pages 38-29; Chapter 6.3.2, Pages 93-94);
- enables users to combine (group, cluster, etc.) variables;
- validate a model process between two sets/subsets of historical data (model validation, testing, etc.; Chapter 6.3.5, Pages 95-101);
- identifying distinguishing characteristics of customers in the system (Chapter 3, Pages 27-33; Chapter 4, Pages 33-66);

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

- generating measures strength (predictive power, correlation, level of significance, concordance, etc.) of variables (nominal, ordinal, interval, etc.; Chapter 1.5.1, Pages 9-11); and
- generating optimal model by terminating when the fitting process reaches an optimal point (Chapter 6.3.6, Pages 102-103).

Regarding Claims 2, 12, 29, 36, 62 and 131Intelligent Miner teaches a predictive modeling system and method wherein the customer data further comprises behavior of prospective and/or current customers with respect to products or services (Chapter 6.3, Pages 90-93; Figure 57).

Regarding Claims 3, 13, 21, 30, 37 and 63 Intelligent Miner teaches a predictive modeling system and method wherein the customer data further comprises purchase and or payment for a service/product of a vendor (Chapter 6.3, Pages 93-95; Chapter 7.3, Pages 113-117; Figure 57).

Regarding Claims 4, 14, 22, 38, 57, 64 and 132Intelligent Miner teaches a predictive modeling system and method wherein the customer data further comprises retention (attrition) information (Chapter 7.3, Pages 113-117).

Regarding Claims 5, 15, 23, 32, 58 and 65 Intelligent Miner teaches a predictive modeling system and method wherein the customer data further comprises risk of asserting claims, loan payment or prepayment to a vendor (Pages 8-9, 37; Chapter 5.4, pages 76-85; Chapter 7.4, Pages 120-122; Figures 33-35).

Regarding Claims 6, 16, 24, 40, 59 and 66 Intelligent Miner teaches a predictive modeling system and method wherein the customer data further comprises product/service usage information (Chapter 7.4, Pages 120-122; Figures 33-35).

Regarding Claims 8-10, 19, 26-27, 34, 47, 48 and 60 Intelligent Miner teaches a predictive modeling system and method further comprising (Chapter 1.6, Pages 14-17; Chapter 2, pages 19-24; Figures 7-9):
- enabling users to replicate projects (save as, copy, etc.);
- enabling users to refine pervious project (review, edit, revise, adjust, etc.); and
- enabling users to apply the model based on the stored project information.

Regarding Claim 71 Intelligent Miner teaches a predictive modeling system and method further comprising displaying a response function of a (target) variable against untransformed, transformed and related transforms of the (source) variables (Figures 62-65).

Regarding Claims 81-84, 86-89, 92-94 and 129-130 Intelligent Miner teaches a predictive modeling system and method further comprising (Chapter 5.4, Pages 76-84; Figures 30, 58):
- enabling users to group/combine variables via the user interface (window, pointer, mouse, etc.; e.g. move between groups/subgroups)
- view variable information (metadata, variable properties, status, class, category, etc.); and
- view variables (data dictionary, library, templates, etc.).

Regarding Claims 90 Intelligent Miner teaches a predictive modeling system and method further comprising displaying probability of event as a function of the variable (Figures 63-65).

Regarding Claim 94 Intelligent Miner teaches a predictive modeling system and method further comprising displaying a decision tree (Chapter 4.4.4, Page 66; Chapter 6.4.1, Page 103; Chapter 7.4.1, Page 120; Figure 50).

Regarding Claim 95 Intelligent Miner teaches a predictive modeling system and method further comprising displaying response distribution function (Figures 64-67).

Regarding Claims 96-125, 136-163 Intelligent Miner teaches a predictive modeling system and method comprising (Chapter 1.5, Pages 9-13; Chapter 1.6, 15-17; Chapter 3, Pages 27-33; Chapter 4, Pages 33-66; Chapter 5, Pages 70-77; Chapter 6, Pages 89-108; Chapter 7, Pages 111-131):
- generating a predictive model based on historical data (Chapter 1.5.1, Pages 9-11);
- selecting variables having at least a predetermined level of significance from a pool (group, library, list, etc.) of predictor variables;
- including non-linear and linear variables in the pool of variables (Pages 38, 93);
- generating a possible model using the selected variables and subset of the data (e.g. training; Chapter 6.3.5-6.3.6, Pages 95-102);
- determining whether the model generalizes the sample data (i.e. curve fitting, training, processing functions, Page 16; Chapter 6.3.5-6.3.6, Pages 95-102);
- if so then apply the model to the remaining data (Chapter 6.3.6-6.3.7, Pages 100-103; and
- displaying selected variables (Figures 13, 14);
- automatically selecting a class (library, list, category, type, etc.) of models suitable for the selected variables and dataset'
- displaying model performance information (statistical report card, lift chart, response chart, statistical reports, degree of monotonicity, minimum false positives/negatives, results analysis, etc.; Pages 29-30, 96, 100-101);
- changing/adjusting performance criteria, transformation or interaction variables to improve the fit of the model (Pages 96, 100-101);
- cross-validating the model (post model tests, random samples, etc.; Chapter 6.3.6-6.3.7, Pages 100-103);

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

- comparing performance measures of validation and training set (Chapter 6.3.5-6.3.7, Pages 95-103; Figures 13-14, 53);
- generating a final model (Chapter 4.5, Pages 67-68Chapter 6.3.7, Page 103); and
- applying the model to at least one non-historical dataset.

Regarding Claims 133-135 Intelligent Miner teaches a predictive modeling system and method further comprising determining a net present value in relation to retention, and promotion/product combinations in order to select a positive net present value outcome (Chapter 4.4.3, Pages 64-67; Chapter 7, Pages 111-131; Figure 54-55).

Claim 50 lacks an inventive step under PCT Article 33(3) as being obvious over Cabena et al., Intelligent Miner for Data Applications Guide (March 1999).

Regarding Claim 50 Intelligent Miner does not expressly teach encrypting the output as claimed.

It is a common and well known business practice to use well known cryptographic techniques to encrypt (secure) sensitive information/data for the purposes of ensuring that the sensitive (e.g. proprietary) data is only viewed/accessed by authorized users.

It would have been obvious to one skill in the art at the time of the invention that the predictive modeling system and method as taught by Intelligent Miner would have benefited from encrypting/securing its output thereby by ensuring that sensitive and/or proprietary data is only viewed/accessed by authorized users.

Claims 1-172 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.